REMARKS

Applicant respectfully traverses the 35 U.S.C. § 103(a) rejection of claims 1-4, 8-10 and 16 over JP H11-122960 to Amada et al. ("Amada et al."), as evidenced by Modulus of Rigidity from the Eningeering Tool Box, http://www/engineeringtoobox.com/moudulus-rigidity-d_946.html ("Modulus of Rigidity Webpage"); and the § 103(a) rejection of claims 5-7 over Amada et al., as evidenced by Modulus of Ridigity Webpage, and further in view of JP H11-036981 to Shinohara et al. ("Shinohara et al.").

Claim 1 recites, "a thermoelectric converting unit, having a first value of rigidity . . . a heat exchange unit, having a second value of rigidity . . . and a cooling unit . . . having a third value of rigidity . . . higher than the first and second values of rigidity." Amada et al. and Shinohara et al. fail to disclose or suggest, alone or in combination, at least this aspect of claim 1. Moreover, Modulus of Rigidity Webpage provides no evidence regarding the relative rigidities of components, as explained by the Declaration of Mr. Kiyohito Murata under 37 C.F.R. § 1.132 ("Declaration of Mr. Murata"). At least for these reasons Amada et al., Shinohara et al., and Modulus of Rigidity Webpage fail to establish a *prima facie* case of obviousness of the pending claims. See M.P.E.P. § 2143.03. No claims have been amended.

With regard to claim 1, the Examiner alleged that based on the teachings of Amada et al. a person of ordinary skill in the art could fabricate an exhaust heat power generation apparatus with a cooling unit having a rigidity higher than the rigidity of a thermoelectric converting unit and a heat exchange unit. Office Action at 4. To reach this conclusion, the Examiner argued that Amada et al. teaches, at paragraph [0052], a water-cooled jacket structure or a refrigerant cooled system, and alleged that this

structure corresponds to the cooling unit of claim 1. Based on this disclosure, the Examiner argued that a person of ordinary skill in the art would use stainless steel, a corrosion resistant material disclosed in paragraph [0050] of Amada et al., for the cooling unit. He alleged that a person of ordinary skill in the art would understand that the thermoelectric conversion module 33 of Amada et al. is fabricated from silica or like materials, and that Amada et al. discloses that elements 21 and 19 in drawing 2 could be made from copper, aluminum, aluminum alloys, and iron, among other materials. By selecting these materials, the Examiner asserted that "one of ordinary skill, based on the teachings of [Amada et al.] could fabricate an exhaust heat electrical generating apparatus embodiment, among other embodiments, with a silica-based thermoelectric converting unit, having a modulus of rigidity (MOR) value of about 19 GPa (WEBPAGE); a heat exchange unit fabricated from either aluminum alloys (MOR=27 GPa; WEBPAGE), copper (MOR =45 GPa; WEBPAGE), iron (MOR as high as 66 GPa; WEBPAGE), carbon steel (MOR =77 GPa; WEBPAGE), or Monel (MOR =66 GPa; WEBPAGE); and a stainless steel cooling unit (MOR =77.2 GPa; WEBPAGE)." Office Action at 4-5.

The Examiner's position rests on a flawed assumption equating "modulus of rigidity" to "rigidity." Contrary to the Examiner's assertion, modulus of rigidity does not equate to rigidity as it is used in claim 1 and as explained in the attached Declaration of Mr. Murata. Modulus of rigidity, as defined by the Modulus of Rigidity Webpage cited by the Examiner, is "the ratio of shear stress to the displacement per unit sample length." By definition modulus of rigidity relates to shearing force and is usually measured in GPa (gigapascals) or ksi (thousands of pounds per square inch). Declaration of Mr.

Murata at paragraph 3. In contrast, rigidity, as used in claim 1, is defined as "relative stiffness" and "indicates how much stronger one member is compared to another." M. Lindenburg's Mechanical Engineering Reference Manual for the PE Exam § 49.2. Rigidity is related to the dimensions of a component and its "tensile and compressive normal stresses." Id. at paragraph 5 and equation 49.8. Rigidity is the relative stiffness of components sharing a load and indicates how much stronger one component is in comparison to another. Declaration of Mr. Murata at paragraph 4. Rigidity values have no units. Id.

As explained in the Declaration of Mr. Murata at paragraph 5, modulus of rigidity and rigidity are not related. They are separate and distinct characteristics of the materials making up the composition of components in a system. In fact, the modulus of rigidity does not factor into a calculation of rigidity of components sharing a load of a system, as disclosed in the present application. One cannot determine the rigidity of components merely by knowing the modulus of rigidity of the materials making up such components. Thus, even if a person of ordinary skill in the art could use the teachings of Amada et al. to make an exhaust heat power generation apparatus with a cooling unit having the highest modulus of rigidity, it would not have been obvious to one of ordinary skill in the art to arrive at the claimed relative rigidities of the thermoelectric converting unit, the heat exchange unit, and the cooling unit, as recited in claim 1, by merely knowing the modulus of rigidity of each component. Modulus of rigidity and rigidity are simply two distinct characteristics of the materials making up the composition of the components and have no bearing on each other.

Additionally, Shinohara et al. does not cure these shortcomings of Amada et al. Shinohara et al. does not appear to disclose or suggest "a cooling unit . . . having a third value of rigidity . . . higher than the first and second values of rigidity," as disclosed in claim 1. For example, Shinohara et al. does not disclose or suggest the relative stiffness of the heat radiating member 13, which the Examiner alleges corresponds to a cooling unit, to conclude that it has the highest value of rigidity.

In view of the above remarks, Applicant respectfully requests reconsideration and allowance of claims 1-10 and 16, all original or previously presented.

Please enter the response, grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: July 7, 2009

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Enclosures: Declaration of Mr. Kiyohito Murata under 37 C.F.R. § 1.132.

M. Lindeburg *Mechanical Engineering Reference Manual for the PE Exam* (1998) pages 49-2 to 49-3.